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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,767	12/12/2001	Zhiqiang Zhang	AD207/2001	2213
7590 03/11/2004				
CARRITHERS LAW OFFICE One Paragon Centre, Suite 140 6060 Dutchman's Lane Louisville, KY 40205			EXAMINER LISH, PETER J	
			ART UNIT 1754	PAPER NUMBER

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/021,767

Applicant(s)

ZHANG ET AL.

Examiner

Peter J Lish

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 17-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-32, 35-39 and 41-43 is/are allowed.
- 6) ☒ Claim(s) 33-34, 40, and 44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date 7.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

Applicant's arguments filed 11/17/03 have been fully considered. Applicant's arguments regarding the rejections applied over the Bonard et al. reference are persuasive and the rejection is hereby withdrawn.

Applicant's arguments regarding the rejection applied over the Davey et al. reference are unpersuasive. It is maintained by the examiner that the material that settles out of the solution of Davey et al. is not the nanotube material; rather it is the extraneous solid material, such as amorphous carbon. Because this material, known to be an impurity to nanotube samples, settles out, the nanotubes form a purified suspension. Additionally, the coiling polymers of Davey et al. disperse the nanotubes in the solution and are viewed to act as a surfactant.

The rejections over the reference to Davey et al., however, are hereby withdrawn, as it is determined that the organic solvent of Davey et al., specifically toluene, does not meet the limitation of being a mineral oil, synthetic oil, hydrogenated oil, or vegetable oil. Toluene does not have the proper number of carbon atoms to be considered an oil. Furthermore, given the purpose of the Davey et al. reference, the purification of nanotube samples, it would not have been obvious to one of ordinary skill to substitute an oil for the organic solvents of Davey et al.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 33, 34, 40, and 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention. Claim 33 recites "a polymeric dispersant of the type used in the lubricant industry". It is indefinite as to what dispersants meet this limitation. Similarly, claim 34 recites "a DI additive package typically sold in the lubricant industry". It is indefinite as to what dispersants meet this limitation. Claim 40 recites "spherical particles", however, the claim depends upon independent claim 17, which requires an aspect ratio of between 500 and 5,000, a range that does not include spherical particles. Claim 44 is seen to be identical to claim 18. The cancellation of one of these claims is requested.

#### ***Allowable Subject Matter***

Claims 17-32, 35-39, and 41-43 are allowed. Reasons for allowance over the previously applied art are seen above.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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**STUART L. HENDRICKSON**  
**PRIMARY EXAMINER**